D i g i g r a m

miXart™ 8

A range of professional multichannel sound cards

User's manual

Digigram

For technical support,
please contact your system supplier.

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INFORMATION FOR THE USER

This device complies with part 15 of FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.
This equipment has been tested and found to comply with the limits for a CLASS B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions contained in this data sheet, may cause harmful interference to radio and television communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
* reorient or relocate the receiving antenna
* increase the separation between the equipment and the receiver
* connect the equipment into an outlet on a circuit different from that of the receiver
* consult the dealer or an experienced audio television technician.

Note: *Connecting this device to peripheral devices that do not comply with CLASS B requirements or using an unshielded peripheral data cable could also result in harmful interference to radio or television reception. The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. To ensure that the use of this product does not contribute to interference, it is necessary to use shielded I/O cables.*

IMPORTANT NOTICE

This card has been tested and found to comply with the following standards:

- International: CISPR22 Class B.
- Europe: EMC 89/336/CEE (1992) specifications.
- United States: FCC Rules-Part 15-Class B (digital device).

In order to guarantee compliance with the above standards in an installation, the following must be done:

- the provided cables must not be modified.
- additional cables used must have their respective shield connected to each extremity.

CONTENTS OF THIS PACKAGE

Thank you for purchasing a Digigram sound card of the miXart 8 range.
The package consists of the following components:
* a miXart 8, miXart 8 AES/EBU, miXart 8 CN, or miXart 8 ES sound card,
* breakout cable for the miXart 8 analog inputs and outputs; in case of miXart 8 AES/EBU, miXart 8 CobraNet, or miXart 8 EtherSound a corresponding additional cable,
* the user's manual at hand
* CD-ROM with drivers, installation notes, …
(not included in the OEM package)

Also available (optional):
2U 19-inch breakout box allowing straightforward and secure connection to all the cards' I/Os.

FEATURES

The cards of the miXart 8 range are audio cards for PCI bus. They are 'Universal PCI 32-bit/33 MHz', which means they can be plugged in 5 V PCI slots as well as in 3.3 V keyed PCI slots. The cards are also compatible with PCI-X interfaces.

Main hardware features

miXart 8

- Full length audio card for PCI bus
- 8 balanced* analog mono inputs (4 line/mic with phantom power)
- 8 servo-balanced** analog mono outputs
- Clock programmable from 7 to 50 kHz
- MPC8240 Power PC processor at 250 MHz
- 16 MB memory SD-RAM

* *can be used with unbalanced signals*

** *Electronically servo-balanced outputs provide automatic level adjustment to accommodate either balanced or unbalanced lines*

miXart 8 AES/EBU

- Full length audio card for PCI bus
- 8 balanced* analog mono inputs (4 line/mic with phantom power)
- 8 servo-balanced** analog mono outputs
- Clock programmable from 7 to 50 kHz
- 4 AES/EBU*** stereo inputs
- 4 AES/EBU*** stereo outputs
- 1 Word Clock sync input
- 1 AES/EBU sync*** input
- 1 black burst input
- 1 LTC input
- 1 Word Clock output
- MPC8240 Power PC processor at 250 MHz
- 16 MB memory SD-RAM

miXart 8 CN

- Full length audio card for PCI bus
- 8 balanced* mono analog inputs (4 line/mic with phantom power)
- 8 servo-balanced** mono analog outputs
- Clock programmable from 7 to 50 kHz
  (fixed at 48 kHz for CobraNet use)
- 8 CobraNet mono output channels
  (PCM 16, 20 or 24 bits, 48 kHz on RJ45)
- 8 CobraNet mono input channels
  (PCM 16, 20 or 24 bits, 48 kHz on RJ45)
- 1 CobraNet synchronized AES/EBU stereo output
  (duplication of the first two CobraNet output channels)
- 1 AES/EBU synchronization input for CobraNet (48 kHz)
- 1 Word Clock synchronization input for CobraNet (48 kHz)
- 1 CobraNet synchronized Word Clock output
- MPC8240 Power PC processor at 250 MHz
- 16 MB memory SD-RAM

*** *can be used as S/PDIF interface as well*

* *can be used with unbalanced signals*

** *electronically servo-balanced outputs provide automatic level adjustment to accommodate either balanced or unbalanced lines*

miXart 8 ES

- Full length audio card for PCI bus
- 8 balanced* mono analog inputs (4 line/mic with phantom power)
- 8 servo-balanced** mono analog outputs
- Clock programmable from 7 to 50 kHz
  (selectable between 48 kHz and 44.1 kHz for EtherSound use, unless when serving as Primary Master: in this case 48 kHz only)
- 8 EtherSound mono input channels (PCM 24 bits, on RJ45)
- 8 EtherSound mono output channels (PCM 24 bits, on RJ45)
- MPC8240 Power PC processor at 250 MHz
- 16 MB memory SD-RAM

Main software features

- PCM, scrub, time-stretching, mixing, routing, level adjustment, phase inversion, mute, panning, balance, parametric equalization, compression/expansion, noise gate
- *Optional*:
  MPEG layer I & II encoding/decoding, layer III decoding, Sample Rate Conversion, Delay

REQUIREMENTS

The miXart 8 range has been developed for IBM and IBM-compatible PC systems.

Minimum hardware requirements

- Pentium III minimum (or equivalent)
- 128 MB RAM
- One free PCI or PCI-X slot (5 V or 3.3 V)

Note: *on computers with more than 512 Mb RAM, the miXart board administration service may take some time to get initialized (several minutes) during Windows start-up.*

Sound cards of the miXart 8 range run under Windows 2000 and Windows XP

HARDWARE INSTALLATION

Note: *We recommend the installation of the miXart software prior to hardware installation.*

Installing the card

Gently plug the card in a free PCI(-X) slot and press it down to position it firmly. Tighten the screw.

Interrupt and memory address

Hardware interrupt and addresses are automatically set up at start-up by the PCI PnP BIOS.

SOFTWARE INSTALLATION

Please visit the Digigram web site (**www.digigram.com**) for the most recent driver.
In case you run a specific application developed or installed by a Digigram Partner, it might require the use of a specific driver version. In this case, make sure that the updated driver has been approved by your supplier.

Installing the miXart driver and VConsole Builder

If a previous version of the driver has been installed on the computer, it must be removed before the installation of a new version. For the uninstall process of old driver versions, please refer to the corresponding section further on in this manual.
If you have downloaded the miXart Kit from the Digigram web site, run the downloaded self-extractable file. The driver installation files are then extracted into a folder of your choice.
The driver of the card must be installed prior to inserting the card in the PC. If you insert the card and the driver has not been installed, the Windows Hardware Wizard will automatically detect your new hardware after logon. Click on the **Cancel** button in the **Welcome to the Found New Hardware Wizard** screen.
You are now ready to install the miXart software.

- Execute **miXartInstall.exe** icon to launch the **InstallShield** Wizard:

- The License Agreement window appears: Click on **Yes**, do the same for the "*MP3 Encoder License Agreement*".
- Choose the destination folder where Set-up will install all miXart files. By default all files are stored under *..\Program Files\Digigram\miXart*. **Next**.
- Choose the destination folder where Setup is to install all miXart Presets. **Next**.
- Choose the destination folder where Setup is to install the miXart Program. **Next**.
- If the card is already inserted in the PC, the Windows Hardware Wizard is launched. Click on **Cancel**.
- Once all files have been copied, the message "*Do you want to restart your computer now*" appears. Select "*Yes, I want to restart my computer now*" and click on **Finish** to complete the miXart driver installation. Instead of letting your computer reboot, you should shutdown your computer.

If the card is not plugged in yet, you are now ready to proceed to the miXart hardware installation.

- Insert carefully the miXart 8 card.
- Reboot your computer.
- After logon, the Windows Hardware Wizard should automatically detect the miXart 8 card.
- The "*Digital Signature Not Found*" message may appear because a non-Microsoft software is about to be installed. Click on **Yes**. *(Windows XP : Click **Continue** if Windows displays a message saying "…the software…has not passed Windows logo testing…").*
- Click on **Finish** to complete the installation process.

Installing the Wave driver

Note: *You cannot install the Wave driver unless you have installed the miXart driver first.*

- Open the **Windows Control Panel** and double-click on the **Add/Remove Hardware** icon.
  Windows XP: ***Add Hardware***)
- Click on the **Next** button in the **Welcome to the Add/Remove Hardware Wizard** screen.
  (*Windows XP*: Select **Yes, I have already connected the hardware**. **Next**.)

- Select **Add/Troubleshoot a device** and click on **Next**.
- Select **Add a new *(hardware)* device** and click on **Next**.
- Select **No, I want to select the hardware from a list** (*Windows XP*: ***Install the hardware that I manually select from a list (Advanced)***) and click on **Next**.
- Select **Sound, video and game controllers** and click on **Next**.
- Click on the **Have Disk**... button.
  In the **Install From Disk** window click on the **Browse...** button and select the **Wave** folder (Win 2000 and XP should select it for you automatically); if you have selected the default settings, the **Wave** folder is under *..\Program Files\ Digigram\miXart\Wave*:
- Go to the **Wave** folder and select the **Oemsetup.inf** file, then click **OK**.
- In the **Add/Remove Hardware Wizard** window, select the **DIGIGRAM Wave for miXart** driver and click on **Next**.
- To Start the Hardware installation click on **Next**.
- The "*Digital Signature Not Found*" message may appear because a non-Microsoft software is about to be installed. Click on **Yes**. (*Windows XP : Click* ***Continue*** *if Windows displays a message saying "…the software…has not passed Windows logo testing…"*).
- Click on **Finish** to complete the Wave driver installation process, and restart your computer

Installing the ASIO driver

Note: *You cannot install the ASIO driver unless you have installed the miXart driver first.*

- Execute ***miXartAsio.exe***.
- Click **Next** in the windows displayed during installation.
- Once all files have been copied, the miXart can be used with any application based on ASIO.

Removing older driver versions

Note: *You have to uninstall the Wave and/or ASIO driver first and then uninstall the miXart driver.*

Uninstalling the Wave driver

- Open the **Windows Control Panel** and double-click on the **System** icon.
- In the **System Properties** window select the **Hardware** tab and click on **Device Manager..**.
- In the **Device Manager** window select **Sound, video and game controllers**, then "*DIGIGRAM Wave for miXart*" driver and right-click on **Uninstall…**
- To confirm the card removal click on **OK**. The "***miXart***" card disappears from the list.
- Click on **No** when asked **Do you want to restart your computer now?**.

You are now ready to remove the miXart driver.

Uninstalling the ASIO driver

- Open the **Windows Control Panel** and double-click on the **Add/Remove Software** icon.
- Select ***'miXart ASIO'*** and click **Change/Remove**.
- Confirm the removal of this driver.

Now you can continue to uninstall the miXart driver.

Uninstalling the miXart driver

- Open the **Windows Control Panel** and double-click on the **Add/Remove programs** icon.
- In the **Add/Remove Programs** window select "***miXart***" and click on the **Change/Remove** button.
- In the **InstallShield Wizard** window select the **Remove** option, click **Next**.
- A warning message notifies you that before continuing with the miXart driver file deletion you have to first uninstall the Wave driver. If the Wave driver has not been uninstalled, click **Cancel** and refer to the "Uninstalling the Wave driver" section.
- When the 'Locked file' detected message appears, click on **Reboot**. The required operation will be performed upon system reboot.
- A message concerning the WDM driver appears. Click on **OK**.
- Select 'Yes, I want to restart my computer now' and click on Finish to complete the miXart driver file removal process and reboot your computer.

How to check the installation

Hardware

To ensure that the miXart 8 card has been properly installed:

- Check that the red LED on the miXart 8 card is flashing. If it isn't then your hardware has not been properly installed.

Software

To ensure that the miXart driver has been properly installed:

- In the Windows Start menu go to *Programs\Digigram\Applications\PlayRec* and launch the **PlayRec.exe:**
- Verify that the miXart card is detected by clicking on **Boards**.

If you cannot see your miXart 8 card(s) in this list, then the miXart software installation has failed.

Wave driver for miXart 8

To ensure that the Wave driver has been properly installed:

- Go to the **Windows Control Panel** and double-click on the **Sounds and Multimedia** icon.
- In the **Audio** tab of the **Sounds and Multimedia Properties** window verify that the miXart is detected.

If you cannot see the miXart 8 devices, then the Wave driver installation has failed. Use the **playrec.exe** application to make sure the miXart card is installed correctly. Uninstall the Wave driver, then reinstall it.

SPECIFICATIONS

Configuration

	miXart 8	miXart 8 AES/EBU	miXart 8 CobraNet	miXart 8 EtherSound
Bus / format	PCI master mode			
Digital Signal Processor	8240 Power PC at 250 MHz			
SDRAM	16 MB			
Size	265 mm × 107 mm			
Power requirements (+5 V / +12 V / -12 V)	2.4 A / 0.3 A / 0.2 A			
Operating: temp / humidity (non-condensing)	0°C/+50°C • 5%/90%			
Storage: temp / humidity (non-condensing)	-5°C/+70°C • 0%/95%			

Inputs

	miXart 8	miXart 8 AES/EBU	miXart 8 CobraNet	miXart 8 EtherSound
Analog line inputs (mono)	8 balanced[•]			
Maximum input level/impedance Inputs 1 – 4 (line/mic, with phantom power) Inputs 5 – 8	+22 dBu / >8 kΩ input level to ensure 0 dBfs switchable during installation between +10 dBu and +22 dBu / >8 kΩ			
Programmable input gain Inputs 1 – 4 (line/mic, with phantom power) Inputs 5 – 8	analog, by steps of 0.5 dB no gain adjustment			
Digital inputs (stereo)	-	4 AES/EBU[••]		-
Digital inputs (mono)	-		8 CobraNet	8 EtherSound

[•] *can be used with unbalanced signals*

[••] *can be used as S/PDIF interfaces as well.*
When recording from an AES/EBU input, the card is locked on the AES/EBU input sample clock. External synchronization is necessary when using simultaneously the 4 AES/EBU inputs. The analog and AES/EBU inputs can be used simultaneously.

Outputs

	miXart 8	miXart 8 AES/EBU	miXart 8 CobraNet	miXart 8 EtherSound
Analog line outputs (mono)	8 servo-balanced*			
Maximum output level/impedance	+22 dBu / <100 Ω			
Programmable output gain	from –91 to +22 dB			
Analog variable attenuation	by steps of 0.5 dB			
Digital outputs (stereo)	-	4 AES/EBU**		
Digital outputs (mono)	-		8 CobraNet	8 EtherSound

External synchronization

	miXart 8	miXart 8 AES/EBU	miXart 8 CobraNet	miXart 8 EtherSound
AES/EBU Sync input	-	1, AES 11 compliant	1, AES 11 compliant *synchronizes CobraNet on an external clock*	-
AES/EBU Sync output	-	1, AES 11 compliant	1, AES 11 compliant, *gets clock synchronization from CobraNet*	-
LTC Sync input LTC (SMPTE) input level: -20 dBu to +6 dBu Time code capture speed tolerance: ±15%	-	yes	-	-
Video Sync input	-	Black Burst or HSync (TTL level)	-	-
Word Clock Sync input	-	yes	yes, *synchronizes CobraNet via an external Word Clock*	-
Word Clock Sync output	-	yes	yes, *gets clock synchronization from CobraNet*	-
Network synchronization	-	-	conductor or slave device capability	Primary Master or Master/Slave

*** *electronically servo-balanced outputs provide automatic level adjustment to accommodate either balanced or unbalanced lines*

** *can be used as S/PDIF interfaces as well*

Audio specifications

	miXart 8	miXart 8 AES/EBU	miXart 8 CobraNet	miXart 8 EtherSound
Sampling frequencies available	Programmable from 7 to 50 kHz, by steps of 100 Hz			
A/D and D/A converter resolution	24-bit			
Supported audio formats & software features Default: Optional:	PCM, scrub, time-stretching, mixing, routing, level adjustment, phase inversion, mute, panning, balance, parametric equalization, compression/expansion, noise gate MPEG layer I & II encoding/decoding, layer III decoding, Sample Rate Conversion, Delay			
Audio processing	32 bit floating point			

Audio Performance

	miXart 8	miXart 8 AES/EBU	miXart 8 CobraNet	miXart 8 EtherSound
Frequency response	20 Hz–20 kHz: ± 0.2 dB			
Channel phase difference: 20 Hz / 20 kHz	<0.2°/2°			
Dynamic range	>93 dB			
THD + noise, 1 kHz at –1 dBfs	<–88 dB (0,004%)			
Crosstalk	1 kHz at 22 dBu: <–105 dB			

Note: *All measurements are done at Fs=48 kHz, in rec+play mode. Results are unweighted.*

Development Environments

	miXart 8	miXart 8 AES/EBU	miXart 8 CobraNet	miXart 8 EtherSound
Digigram Management: miXart Kit	1.60 and higher	1.60 and higher	2.0 and higher	2.10 and higher
Other management	Wave (all boards), ASIO (all except miXart 8 ES)			
OS supported	Windows 2000 and XP			

SOFTWARE SPECIFICATIONS

Once you have installed the Wave driver, any Wave compliant application can run on the card.

Digigram Wave Mixer

The Digigram Wave Mixer allows to set input and output levels as well as other settings such as input type and digital data format. Please refer to the on-line help of the Digigram Wave Mixer.

VConsole Builder

The VConsole Builder application gives access to the management of a broad range of mixing and routing functionalities as well as audio effects, using a virtual console as interface. Please refer to the on-line help of this application.

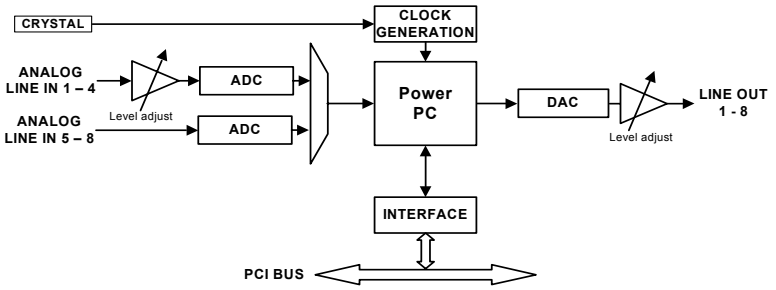
Note: The use of the VConsole Builder excludes the use of the Digigram Wave Mixer. The Wave Mixer settings are disabled when the VConsole Bulider application is launched.

CNConfig

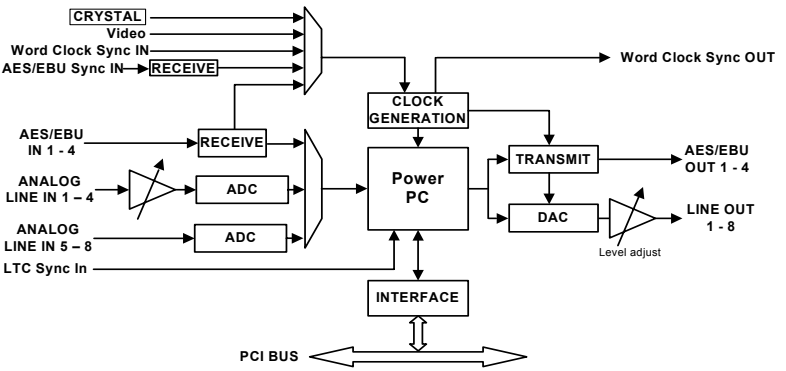
CNConfig allows the configuration of the CobraNet settings of all installed miXart 8 CN cards.

APPENDICES

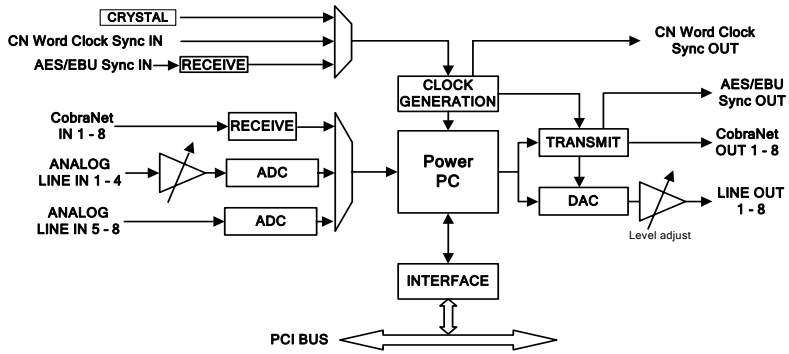
Schematic diagram miXart 8



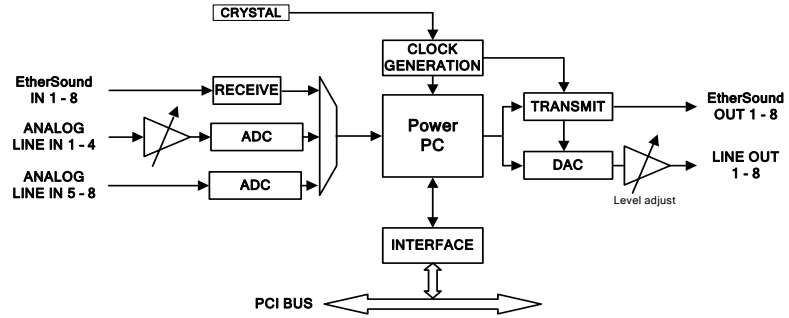
Schematic diagram miXart 8 AES/EBU



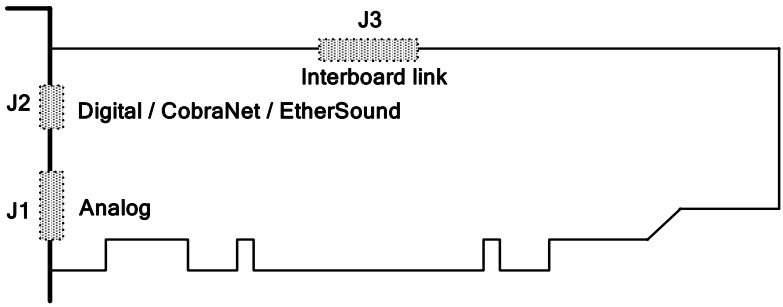
Schematic diagram miXart 8 CobraNet



Schematic diagram miXart 8 EtherSound



Layout



Connectors

J1: Analog cable connector (High density SCSI2 type, 40-pin). The matching cable is provided with the miXart 8 card.

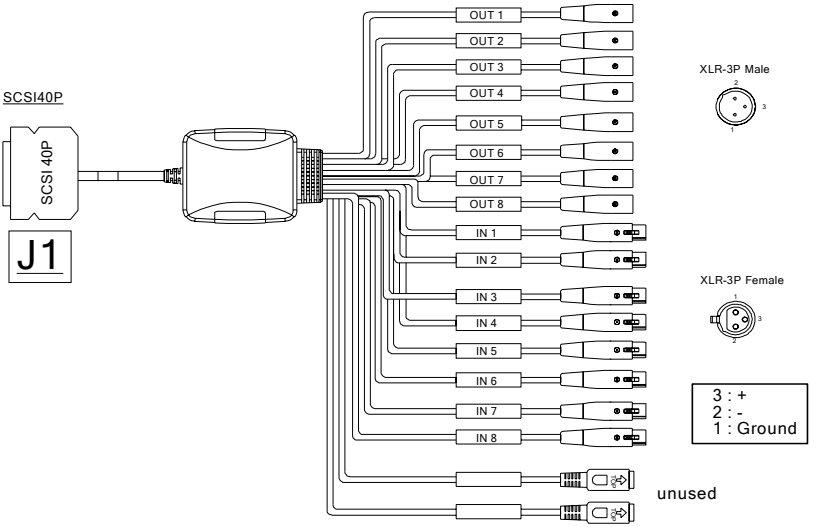
J2: Digital cable (High density MDR type, 26-pin) for miXart 8 AES/EBU, miXart 8 CobraNet, or miXart 8 ES. The cable matching the card is provided.

Note: *Replacement breakout cables are available on request. Please specify "Analog", "AES/EBU", "CobraNet", or "EtherSound". These cables contain active components. Therefore, we do not publish the wiring diagrams and strongly discourage the use of cables other than those provided by Digigram.*

J3: Inter-card synchronization connector, used in multi-card configurations.

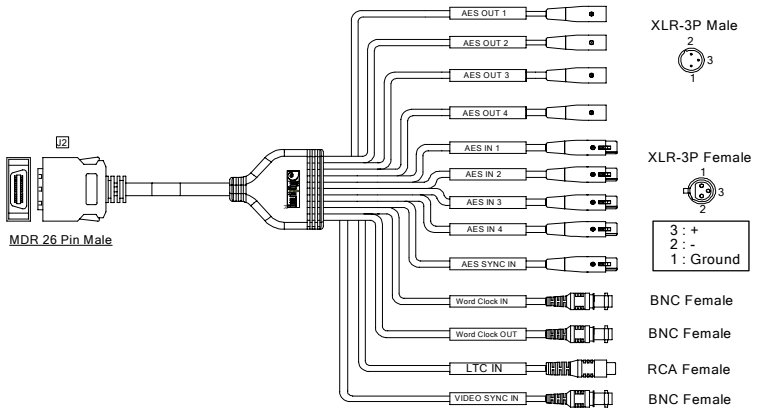
Analog cable diagram – all miXart cards

Schematic diagram of the cable delivered by Digigram:



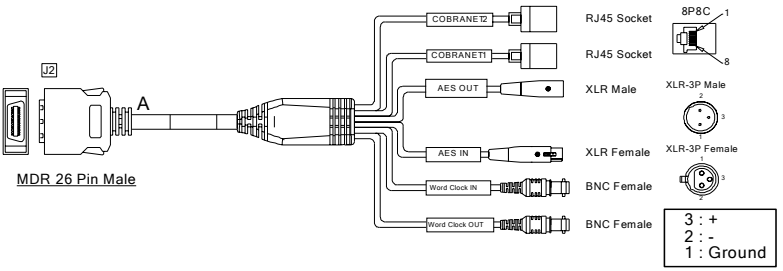
miXart 8 AES/EBU digital cable

Schematic diagram of the cable delivered by Digigram:



miXart 8 CobraNet digital cable

Schematic diagram of the cable delivered by Digigram:



miXart 8 EtherSound digital cable

Schematic diagram of the cable delivered by Digigram: